Maine Air National Guard	**)**	**Departmental**
Penobscot County	**)**	**Finding of Fact and Order**
Bangor, Maine	**)**	**Air Emission License**
A-627-71-E-R/A (SM)	**)**	**After-The-Fact**

After review of the air emissions license application, staff investigation reports and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S.A., Section 344 and Section 590, the Department finds the following facts:

I. REGISTRATION

A. Introduction

The Maine Air National Guard (Air Guard) of Bangor, Maine has applied for an air emission license renewal for their fuel burning equipment and miscellaneous process equipment. The Air Guard operates in several buildings that coexist with various private and commercial operations. This application renewal will update and include several new boilers and generators that were previously not listed in the air license.

B. Emission Equipment

The Air Guard is licensed to operate the following #2 oil-fired boilers:

Emission Unit	Max Design Capacity (MMBtu/hr)	Max Firing Rate (gal/hr)	Date of manufacture	Date of Installation	Stack #	Control Device	License Status
AEI-L-416-1	1.81	13.2	1989	1989	416-A	None	**New**
AEI-L-417-1	2.74	20.0	1985	1986	417-A	None	Renewal
AEI-L-417-2	1.81	13.2	1986	1987	417-B	None	**New**
AEI-L-420-1	1.18	8.6	1986	1987	420-A	None	Renewal
AEI-L-423-1	1.78	13.0	1998	1998	423-A	None	**New**
AEI-L-486-1	1.03	7.5	1999	1999	486-B	None	Renewal
AEI-L-488-1 *	1.40	14.9	1994	1994	488-A	None	Renewal
AEI-L-491-1	1.37	10.0	1998	1998	491-A	None	**New**
AEI-L-496-1	4.80	35.0	1985	1986	496-A	None	Renewal
AEI-L-496-2	4.80	35.0	1986	1986	496-A	None	Renewal
AEI-L-497-1	1.78	13.0	1997	1997	497-A	None	**New**
AEI-L-505-1	1.81	13.2	1985	1985	505-A	None	**New**

Boiler list continued…

Emission Unit	Max Design Capacity (MMBtu/hr)	Max Firing Rate (gal/hr)	Date of manufacture	Date of Installation	Stack #	Control Device	License Status
AEI-L-505-2	1.81	13.2	1985	1985	505-B	None	**New**
AEI-L-512-1	1.78	13.0	2001	2001	512-A	None	**New**
AEI-L-513-1	1.23	9.0	1986	1986	513-A	None	Renewal
AEI-L-515-1	6.43	46.9	1959	1960	515-A	None	Renewal
AEI-L-518-1	1.05	7.5	1999	1999	518-A	None	**New**
AEI-L-518-2	1.05	7.5	1999	1999	518-A	None	**New**
AEI-L-536-1	1.30	9.5	1997	1998	536-A	None	**New**
AEI-L-541-1	1.86	13.6	1991	1992	541-A	None	Renewal
AEI-L-542-1	4.32	31.5	1994	1995	542-A	None	Renewal
AEI-L-510-1	1.08	7.9	2004	**proposed**	510-A	None	**New**
AEI-L-510-2	1.08	7.9	2004	**proposed**	510-A	None	**New**

* AEI-L-488-1 fires propane, all other units fire #2 fuel oil

Generators operated at the Air Guard:

Emission Unit	Type of Equipment	Max Design Capacity (MMBtu/hr)	Max Firing Rate (gal/hr)	Date of manufacture	Date of Installation	License Status
AEI-L-001	Generator	2.06	15.0	1991	1999	**New**
AEI-L-002	Generator	1.19	8.7	1984	2003	Removed
AEI-L-003	Fire Pump	3.43	25.0	1994	1994	Renewal
AEI-L-004	Fire Pump	3.43	25.0	1994	1994	Renewal
AEI-L-005	Fire Pump	3.43	25.0	1994	1994	Renewal
AEI-L-006	Generator	1.60	11.7	2003	2003	**New**
AEI-L-007	Generator	2.14	15.6	1990	1990	Renewal
AEI-L-008	Generator	2.06	15.0	1988	2002	**New**
AEI-L-009	Generator	1.19	8.7	1984	2003	Removed
AEI-L-010	Generator	3.84	28.0	1984	1985	**Storage**
AEI-L-011	Generator	3.84	28.0	1984	1985	**Storage**
AEI-L-012	Generator	3.84	28.0	1984	1985	**Storage**
AEI-L-013	Generator	3.84	28.0	1984	1985	**Storage**
AEI-L-014	Generator	1.37	10.0	2001	2001	**New**
AEI-L-015	Generator	1.60	11.7	1998	1998	Renewal
AEI-L-016	Generator	4.69	34.2	1998	1998	**New**
AEI-L-017	Generator	2.06	15.0	1994	1994	Renewal
AEI-L-018	Generator	1.19	8.7	1984	1999	**New**
AEI-L-019	Generator	0.69	5.1	2003	2003	**New**
AEI-L-020	Generator	0.69	5.1	1994	2001	**New**

AEI-L-021	Generator	0.69	5.1	2003	2003	**New**
AEI-L-022	Generator	0.69	5.1	1988	2003	**New**
AEI-L-023	Generator	0.70	5.1	2003	2003	**New**
AEI-L-024	Generator	0.69	5.1	2003	2003	**New**
AEI-L-025	Generator	0.70	5.1	1988	2003	**New**
AEI-L-026	Generator	0.69	5.1	1985	2003	**New**
AEI-L-027	Generator	0.81	5.9	1992	2000	Renewal
AEI-L-028	Generator	0.70	5.1	2003	2003	**New**
AEI-L-029	Generator	0.70	5.1	2002	2003	Removed
AEI-L-030	Generator	0.69	5.1	1988	1999	**New**
AEI-L-031	Generator	0.70	5.1	1988	2003	**New**
AEI-L-032	Generator	0.70	5.1	1988	2003	**New**

Insignificant Emission Sources

The Guard operates several other boilers and propane heaters at the facility's buildings, each under 1.0 MMBtu/hr heat input capacity. In addition, the Guard also operates several other generators and internal combustion engines, each under 0.5 MMBtu/hr heat input capacity. Therefore, these boilers, heaters, and generators are mentioned only for inventory purposes and will not be included in short term emission rate calculations. These units are not listed in the license and will not be included in the fuel cap for the total facility's emissions calculations.

C. Application Classification

The modification of a minor source is considered a major modification based on whether or not expected emission increases exceed the "Significant Emission Levels" as defined in the Department's regulations. The emission increases are determined by subtracting the current licensed emissions preceding the modification from the maximum future licensed allowed emissions, as follows:

Pollutant	**Current License (TPY)**	**Future License (TPY)**	**Net Change (TPY)**	**Sig. Level**
PM	4.4	4.4	0	100
PM_{10}	4.4	4.4	0	100
SO_2	15.4	16.2	0.8	100
NO_x	29.1	42.0	12.9	100
CO	6.5	7.6	1.1	100
VOC	20	30	10	50

Therefore, this air emission license is considered a renewal and an amendment for an existing source. The modification is determined to be a minor modification and has been processed as such.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in Chapter 100 of the Air Regulations. Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

BPT for existing emissions equipment means that method which controls or reduces emissions to the lowest possible level considering:

- the existing state of technology;
- the effectiveness of available alternatives for reducing emission from the source being considered; and
- the economic feasibility for the type of establishment involved.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in Chapter 100 of the Air Regulations. BACT is a top down approach to selecting air emission controls considering economic, environmental and energy impacts. The Air Guard will be subject to BACT requirements for several boilers and emergency generators that were not previously listed in the air emissions license.

Descriptions of the applicable requirements are provided below under the appropriate headings.

B. BPT/BACT for Units and Operations

1. *#2 Oil-Fired Boilers*

The Air Guard operates several oil-fired boilers to provide building heat and hot water to the various buildings that make up the facility. The boilers' combined design capacity is 49.3 MMBtu/hr, however, the average boiler's size is 2.5 MMBtu/hr with only one boiler over 5.0 MMBtu/hr.

The regulated pollutants emitted from the #2 oil-fired boilers are particulate matter (PM), particulate matter with a diameter smaller than ten microns (PM10), sulfur dioxide (SO2), nitrogen oxides (NOx), carbon monoxide (CO), and volatile organic compounds (VOC). The Air Guard shall not exceed a maximum combustion of 400,000 gallons per year of #2 fuel oil, with a maximum fuel sulfur content of 0.5% by weight, in the boilers to meet BPT for all emitted pollutants. This fuel limit is

carried over from the former license, A-627-71-C-A/N. These conditions meet the requirement of BACT for the previously unlisted boilers. Therefore, due to the individual size of the boilers, the combustion of low sulfur distillate fuel oil, and a limit of 400,000 gallons per year, emissions from these boilers are considered small and do not warrant additional pollution control equipment.

2. *Diesel Generators*

The Air Guard operates several back-up emergency diesel generators to supply electricity to their buildings and boiler feed water pumps in the event normal electric service is interrupted. The existing diesel generators have heat input rates less than 5.0 MMBtu/hour. There were several emergency diesel generators in various buildings that were not included in the previous air emissions license, however, this air emissions license will include all units and some "storage" units that are currently not in use but may be used in the future. The primary pollutant emitted from diesel generators is NOx. Both BPT, for the existing generators, and BACT, for the previously unlisted generators, are achieved by limiting operation of each emergency diesel generator to 250 hours per year, limiting the diesel fuel's sulfur content to a maximum of 0.05% by weight, and following the Department's March 1995 SICE guidance for Stationary Internal Combustion Engines.

3. *Jet Engine Test Cell*

The Building 500 Engine Test Cell is a unique emission source. Jet engines are mounted inside Building 500 for static firings to test engine performance. Jet exhaust is vented to the atmosphere through a 10-foot diameter, 87-foot long horizontal muffler with 90^{o} baffle plates at the exhaust end of the muffler. These baffles direct jet exhaust vertically into the atmosphere at approximate velocities of 650 miles per hour. Jet engines of up to 18,500 pounds thrust are tested in the cell. The average total amount of jet fuel consumed in the test cell is approximately 10,000 gallons which corresponds to between 15-20 jet test firings per year. During some years the jet engine test cell has fired between 25-30 times, which has been determined to emit approximately 4 tons of NOx per year. A search was conducted to find a jet fuel additive which would reduce emissions from the jet test cell, however, no additive was found.

4. *Paint Booth*

There is one paint booth on base currently in service located in Building 496. To provide some indication of the relative magnitude of non combustion related VOC emissions, a detailed analysis was completed on the Building 496 Paint Booth. MSDS sheets were collected for each paint and based upon the percent volatiles and

the estimated amount of gallons used, the total pounds of VOC emissions per year was calculated. The results showed an average yearly total of 3,400 pounds of VOC emissions from Building 496 Paint Booth. BPT for the paint spray booth will include continued maintenance of the filter elements to minimize PM emissions and maintaining monthly records of paint purchase and use.

5. *Deicing and anti-icing operations*

The base also uses propylene glycol based anti-icing deicer fluid (ADF). The base uses about 25,000 gallons to 35,000 gallons per winter. During contingency operations, the base may use substantially more ADF. The current license does not account for the VOC emission contribution from ADF. Emissions factors will be based on calculations by US EPA publication "Preliminary Data Summary of Airport Deicing Operations (Revised)" dated August 2000. The EPA emission factor for VOC emissions from deicing operations was determined to be 16.1 lb VOC/10,000 gallons of fluid dispensed. Because this process wasn't included in the previous air emission license emissions, the facility wide VOC limit will increase. Currently the VOC limit for the base is 20 tons per year, this limit will now increase to 30 tons per year to account for the deicing and anti-icing operations.

6. *AST, UST, and Solvent Tanks*

The primary mission for the Air Guard is to stage aerial refueling mission. As such, substantial quantities of fuel flow from tank trucks to storage tanks and back out to aircraft either by a hydrant network or by tanker truck. These on-site transfers are stationary sources for volatile organic compounds and are included in the emissions caps established in the license. The facility has removed all underground storage tanks since the issuance of the original license. There are now only two listed storage tanks with capacities exceeding 39,000 gallons. The base delivers over 12,000,000 gallons per year of JP-8 formula fuel on average and during contingencies can deliver much greater quantities.

The Air Guard, in an effort to limit VOC emissions, will maintain the submerged fill pipe for refilling both above and underground storage tanks and minimize fugitive VOC emissions from accidental spills by maintaining the installed tanker truck spill containment system. These conditions, including the overall 30 tons per year VOC limit for the entire facility's stationary sources, meet the requirements of BPT for the non-combustion VOC sources. Furthermore, the Air Guard shall also meet the requirements of Chapter 118 of the Maine Air Bureau regulations in order to minimize emissions during transfer of gasoline from tank trucks to storage tanks.

7. *Facility Emissions and Fuel Use Caps*

Allowable annual facility emissions are calculated from the combustion of 400,000 gallons of 0.5% sulfur content #2 fuel oil based on a 12 month rolling total, operation of the emergency diesel generators each limited to 250 hours per year, and the non-combustion VOC emitting equipment, including those listed in Section II.B.

Total Licensed Annual Emission for the Facility
Tons/year
(used to calculate the annual license fee)

	PM	**PM_{10}**	**SO_2**	**NO_x**	**CO**	**VOC**
Boilers	3.5	3.5	14.2	11.2	1.0	0.5
Back-up Generators	0.9	0.9	2.0	30.8	6.6	2.5
Process emissions	--	--	--	--	--	27
Total TPY	**4.4**	**4.4**	**16.2**	**42.0**	**7.6**	**30**

III. AMBIENT AIR QUALITY ANALYSIS

According to the Maine Regulations Chapter 115, the level of air quality analyses required for a renewal source shall be determined on a case-by case basis. Modeling and monitoring are not required for a renewal if the total emissions of any pollutant released do not exceed the following:

Pollutant	**Tons/Year**
PM	50
PM_{10}	25
SO_2	50
NO_x	100
CO	250

Based on the above total facility emissions, the Air Guard is below the emissions level required for modeling and monitoring.

ORDER

Based on the above Findings and subject to conditions listed below the Department concludes that the emissions from this source:

-will receive Best Practical Treatment,
-will not violate applicable emission standards, and
-will not violate applicable ambient air quality standards, or increment standards either alone or in conjunction with emissions from other sources.

The Department hereby grants Air Emission License A-627-71-E-R/A (SM), subject to the following conditions:

STANDARD CONDITIONS

(1) Employees and authorized representatives of the Department shall be allowed access to the licensee's premises during business hours, or any time during which any emissions units are in operation, and at such other times as the Department deems necessary for the purpose of performing tests, collecting samples, conducting inspections, or examining and copying records relating to emissions (Title 38 MRSA §347-C).

(2) The licensee shall acquire a new or amended air emission license prior to commencing construction of a modification, unless specifically provided for in Chapter 115. [MEDEP Chapter 115]

(3) Approval to construct shall become invalid if the source has not commenced construction within eighteen (18) months after receipt of such approval or if construction is discontinued for a period of eighteen (18) months or more. The Department may extend this time period upon a satisfactory showing that an extension is justified, but may condition such extension upon a review of either the control technology analysis or the ambient air quality standards analysis, or both. [MEDEP Chapter 115]

(4) The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request. [MEDEP Chapter 115]

(5) The licensee shall pay the annual air emission license fee to the Department, calculated pursuant to Title 38 M.R.S.A. §353. [MEDEP Chapter 115]

(6) The license does not convey any property rights of any sort, or any exclusive privilege. [MEDEP Chapter 115]

(7) The licensee shall maintain and operate all emission units and air pollution systems required by the air emission license in a manner consistent with good air pollution control practice for minimizing emissions. [MEDEP Chapter 115]

(8) The licensee shall maintain sufficient records to accurately document compliance with emission standards and license conditions and shall maintain such records for a minimum of six (6) years. The records shall be submitted to the Department upon written request. [MEDEP Chapter 115]

(9) The licensee shall comply with all terms and conditions of the air emission license. The filing of an appeal by the licensee, the notification of planned changes or anticipated noncompliance by the licensee, or the filing of an application by the licensee for a renewal of a license or amendment shall not stay any condition of the license. [MEDEP Chapter 115]

(10) The licensee may not use as a defense in an enforcement action that the disruption, cessation, or reduction of licensed operations would have been necessary in order to maintain compliance with the conditions of the air emission license. [MEDEP Chapter 115]

(11) In accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department, the licensee shall:

A. perform stack testing to demonstrate compliance with the applicable emission standards under circumstances representative of the facility's normal process and operating conditions:
   1. within sixty (60) calendar days of receipt of a notification to test from the Department or EPA, if visible emissions, equipment operating parameters, staff inspection, air monitoring or other cause indicate to the Department that equipment may be operating out of compliance with emission standards or license conditions; or
   2. pursuant to any other requirement of this license to perform stack testing.

B. install or make provisions to install test ports that meet the criteria of 40 CFR Part 60, Appendix A, and test platforms, if necessary, and other accommodations necessary to allow emission testing; and

C. submit a written report to the Department within thirty (30) days from date of test completion.

[MEDEP Chapter 115]

(12) If the results of a stack test performed under circumstances representative of the facility's normal process and operating conditions indicate emissions in excess of the applicable standards, then:

A. within thirty (30) days following receipt of such test results, the licensee shall re-test the non-complying emission source under circumstances representative of the facility's normal process and operating conditions and in accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department; and

B. the days of violation shall be presumed to include the date of stack test and each and every day of operation thereafter until compliance is demonstrated under normal and representative process and operating conditions, except to the extent that the facility can prove to the satisfaction of the Department that there were intervening days during which no violation occurred or that the violation was not continuing in nature; and

C. the licensee may, upon the approval of the Department following the successful demonstration of compliance at alternative load conditions, operate under such alternative load conditions on an interim basis prior to a demonstration of compliance under normal and representative process and operating conditions.

[MEDEP Chapter 115]

(13) Notwithstanding any other provisions in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or Part 70 license requirement. [MEDEP Chapter 115]

(14) The licensee shall maintain records of malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emissions unit itself that would affect emission and that is not consistent with the terms and conditions of the air emission license. The licensee shall notify the Department within two (2) days or the next state working day, whichever is later, of such occasions where such changes result in an increase of emissions. The licensee shall report all excess emissions in the units of the applicable emission limitation. [MEDEP Chapter 115]

(15) Upon written request from the Department, the licensee shall establish and maintain such records, make such reports, install, use and maintain such monitoring equipment, sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such a manner as the Department shall prescribe), and provide other information as the Department may reasonably require to determine the licensee's compliance status. [MEDEP Chapter 115]

SPECIFIC CONDITIONS

(16) The Air Guard shall limit emissions from the boilers (greater than 1.0 MMBtu/hr) to the following:

Pollutant	lb/MMBtu	lb/hour
PM	0.12	0.8
PM10	--	0.8
SO2	--	3.3
NOx	--	2.6
CO	--	0.2
VOC	--	0.1

Note: The calculated maximum lb/hour emission limit is based on the largest boiler, operating at 6.56 MMBtu/hr.

Fuel use shall be limited to 400,000 gallons per year of #2 fuel oil (0.14 MMBtu/gal), based on a 12-month rolling total. The maximum sulfur content of the #2 fuel oil shall not exceed 0.5% by weight. Fuel oil delivery receipts shall be kept to show the amount of fuel purchased along with sulfur content verification.

[MEDEP Chapter 115]

(17) Visible emissions from the boilers' stacks shall not exceed 20% opacity on a 6-minute block average, except for no more than 2 six-minute block averages in a 3-hour period. Visible emission from the diesel generators' shall not exceed 30% opacity on a 6-minute block average, except for no more than 2 six-minute block averages in a 3-hour period. [MEDEP Chapter 101]

(18) The Air Guard shall limit each emergency diesel generator to 250 hours per year of operation. The maximum sulfur content of the diesel fuel shall be limited to 0.05% by weight. An hour meter will be used to determine compliance with the 250 hours per year and a written log shall be maintained. [MEDEP Chapter 115]

(19) The Air Guard shall use JP-8 fuel or similar civilian grade of aviation fuel in their operations. The Air Guard shall maintain the submerged fill pipe for refilling storage tanks and minimize fugitive VOC emissions from accidental spills by maintaining the installed tanker truck spill containment system. The Air Guard shall limit total VOC emissions from the facility to 30 tons per year, based on a 12-month rolling total. The Air Guard shall maintain accurate records of all fuel fillings to determine VOC emissions associated from the several storage tanks. [MEDEP Chapter 115]

(20) The Air Guard shall meet the requirements imposed in Chapter 118 of the Maine Air Bureau regulations, in order to minimize emissions during transfer of gasoline from tank trucks to stationary gasoline storage tanks. [MEDEP Chapter 118]

(21) The Guard shall maintain the filter elements on the spray paint booths to minimize PM emissions. The number of gallons of paints, and the VOC content (lb/gallon) of these paints, that are used in the spray booths and other non-combustion VOC sources shall be documented to determine the amount of VOC emissions associated with that process. Monthly paint purchases and use records shall be maintained. [MEDEP Chapter 115]

(22) The Air Guard shall document the quantity of deicing and anti-icing operations on a monthly basis. The emission factor of 16.1 lb VOC/10,000 gallons of fluid dispensed shall be used to determine VOC emissions from these operations. The Air Guard shall maintain facility-wide VOC emissions to less than 30 tons per year. [MEDEP Chapter 115]

(23) The Air Guard shall document the number of times the jet engine test cell is fired and determine the associated emissions from it. [MEDEP Chapter 115]

(24) **Parts Washer**

The parts washers are subject to the operational and record keeping requirements of MEDEP Chapter 130 [MEDEP Chapter 130]

(25) **Fugitive Emissions**

Visible emissions from a fugitive emission source (including stockpiles and roadways) shall not exceed an opacity of 20 percent, except for no more than five (5) minutes in any 1-hour period. Compliance shall be determined by an aggregate of the individual fifteen (15)-second opacity observations which exceed 20 percent in any one (1) hour. [MEDEP Chapter 101]

(26) **General Process Sources**

Visible emissions from any general process source shall not exceed an opacity of 20% on a six (6) minute block average basis, except for no more than one (1) six (6) minute block average in a 1-hour period. [MEDEP Chapter 101]

(27) **Air Toxics Emission Statement**

In accordance with MEDEP Chapter 137, the licensee shall report, no later than September 1, every two years (1996,1998,etc.) or in a timeframe designated by the

Department, the information necessary to accurately update the State's toxic air pollutants emission inventory by means of a written emission statement containing the information required in MEDEP Chapter 137.

Reports and questions on the Air Toxics emissions inventory portion should be directed to:

Attn: Toxics Inventory Coordinator
Maine DEP
Bureau of Air Quality
17 State House Station
Augusta, ME 04333-0017

Phone: (207) 287-2437

[MEDEP Chapter 137]

(25) **Payment of Annual License Fee**

The Air Guard shall pay the annual air emission license fee within 30 days of October 30th of each year. Pursuant to 38 MRSA §353-A, failure to pay this annual fee in the stated timeframe is sufficient grounds for revocation of the license under 38 MRSA §341-D, subsection 3.

DONE AND DATED IN AUGUSTA, MAINE THIS ____ DAY OF _____ 2004.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:_____
DAWN R. GALLAGHER, COMMISSIONER

The term of this license shall be five years from the date of signature below.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: March 1, 2004
Date of application acceptance: March 22, 2004
Date filed with Board of Environmental Protection:_____

This order prepared by Edwin L. Cousins, BAQ